

ABSTRACT

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An infrared photodetector includes at least two quantum well layers with depths adjusted to provide different peak spectral responses. A readout circuit includes first and second charge wells for receiving moving charges from the photodetector. The readout circuit also includes a switching mechanism for selectively switching the second charge well in parallel with the first charge well, to vary the integration time of the moving charges. Switching the second charge well in parallel with the first charge well increases the dynamic range of the system. The switching can be based on one or more of a) a range to a target that is being detected by the photodetector, b) a brightness (e.g. in the infrared range) of the target, c) a rate of charge of the first charge well, and d) a remaining capacity of the first charge well.